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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,246	09/02/2003	Masato Tanaka	00684.003357.1	1862

5514 7590 02/17/2004

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/652,246

Applicant(s)

TANAKA, MASATO 

Examiner

Christopher D RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5-14, 17 and 20-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-7, 9, 17 and 20-28 is/are rejected.
- 7) ☒ Claim(s) 8 and 10-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/119,003.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date various.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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## **DETAILED ACTION**

### ***Priority***

Applicants are asked to update the status of the parent application, reference on specification page 1.

### ***Claim Objections***

Claims 10 and 23 are objected to because of the following informalities: Claim 10 contains a typographical error of the Bragg angle for the porphyrin. The recited angle of 142 degrees should be 14.2 degrees noting specification page 12, line 13. Claim 23 contains a typographical error in the recitation of the angle of "20" in the last line. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 23-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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New claims 23, 25, and 27 specify that the electrophotographic photosensitive member has a photosensitive layer that contains a porphyrin compound being a 5, 10, 15, 20-tetrapyridyl-21H, 23H- porphyrin compound which has a specific crystal form. New claims 24, 26, and 28 recite a photosensitive layer that contains a porphyrin compound being a 5, 10, 15, 20-tetrapyridyl-21H, 23H- porphyrinato-zinc compound which has a specific crystal form chosen from a specific group of options. The specification specifically states that the porphyrin compound used in the electrophotographic photosensitive member has a structure represented by the formula (1) on page 8. More specific examples of the compound follow on the following specification pages, such as on page 11 where compounds represented by the formula (1) are disclosed as 5, 10, 15, 20-tetrapyridyl-21H, 23H- porphyrin. It appears that the claim to 5, 10, 15, 20-tetrapyridyl-21H, 23H- porphyrin and 5, 10, 15, 20-tetrapyridyl-21H, 23H- porphyrinato-zinc would permit any possible substituents on these generally named compounds. For example, any substitution corresponding to the R groups in the general formula (1) would be permitted in these claims. Further, any possible central atom or ligand would be permitted in claims 23, 25, and 27. Formula (1) is specific that for the photosensitive member, the porphyrin must have only those R groups as recited and only those M groups as recited. It appears that the claims encompass compounds outside the scope of the formula (1), which include new matter not originally disclosed (e.g., one or more R as mercapto). If applicants take the position that recited compound do not permit any further substitution (e.g., all R groups are hydrogen and M is two hydrogen atoms) they are asked to specifically and clearly state this in the response. Compounds with no further substitution would be within the scope of the specification and the rejection would be withdrawn.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 5-275771 considered with "α,β,γ,δ-Tetra-(4-pyridyl)-porphine and Some of its Complexes" to Fleischer, *Inorganic Chemistry*, Vol. 1, No. 3, pp. 493-495.

The JP document discloses a photoconductive element having a substrate and a porphyrin thin film thereon (¶ [0001]). ¶ [0049] discloses a 5, 10, 15, 20-tetra (4-pyridyl) porphyrin zinc compound used in such a thin film (see compound (1-4) on specification page 14). Other tetra (pyridyl) porphyrins are disclosed in ¶¶ [0032] - [0054] (compare with compounds (1-1) through (1-6) in the specification). The films are produced on a substrate in the examples.

The JP document does not specify the Bragg angle of the produced 5, 10, 15, 20-tetra (4-pyridyl) porphyrin zinc present as a thin film, but Fleischer teaches that 5, 10, 15, 20-tetra (4-pyridyl) porphyrin zinc has a Bragg angle at 19.52 degrees as measured by copper radiation (p. 292). Also note that the other (4-pyridyl) porphyrins produced have a Bragg angle at +/- 20 degrees.

Based on the evidence in Fleischer, there is sufficient reason to believe that JP reference porphyrins inherently have a Bragg angle of 20 degrees +/- 1 degree when measured by Copper radiation. The disclosure of the films on their respective supports and the disclosure

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photoconductive elements containing these compounds as a film appears to properly disclose an electrophotographic photosensitive member as required by the instant claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7, 9, 20, 23, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-275771 in view of " $\alpha,\beta,\gamma,\delta$ -Tetra-(4-pyridyl)-porphine and Some of its Complexes" to Fleischer, *Inorganic Chemistry*, Vol. 1, No. 3, pp. 493-495 and further in view of *Organic Photoreceptors for Imaging Systems* to Borsenberger, pp. pp. 6-17 & 289-292.

The JP reference and Fleischer were discussed above. In the event the reference does not properly disclose the necessary structure of the claimed electrophotographic photosensitive member (i.e., claim 23), this combination rejection with Borsenberger is applied. Additionally, this rejection is extended to claim 27 based on the combination with Borsenberger for specific devices containing photoconductive elements. Claims 5-7, 9, and 20 are added to the rejection in view of Borsenberger for its disclosure of useful constructions of photoconductive elements.

Borsenberger is relied upon to show the conventional construction of electrophotographic photoconductors (i.e., photoreceptors). These devices have a substrate with a layer of the photoconductive material thereover, typically as a charge generation (photosensitive) layer having a thickness of 1 to 3 microns and a charge transport layer (pp. 289-292). Borsenberger also shows that photoreceptors are typically placed in an

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electrophotographic apparatus having a charging means, an exposure means, a developing means, and a transfer means (Fig. 5, p. 8). Typical exposure sources include laser beams (p. 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare an electrophotographic photoconductor using a porphyrin of the JP in a photosensitive layer because the JP document is specifically concerned with the formation of photoconductive elements using thin films of the porphyrin. Given that electrophotographic photoconductors (photoconductive elements) typically have a photosensitive layer over a conductive substrate as seen in Borsenberger, the artisan would have found it obvious to place the photosensitive layer of the JP reference's material on a support to form the element. The artisan would have found it obvious to place the photoconductor in the well known structure of an electrophotographic copying apparatus to automate the production of copies using the electrophotographic material.

Claims 17, 21, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-275771 in view of "α,β,γ,δ-Tetra-(4-pyridyl)-porphine and Some of its Complexes" to Fleischer, *Inorganic Chemistry*, Vol. 1, No. 3, pp. 493-495, further in view of *Organic Photoreceptors for Imaging Systems* to Borsenberger, pp. pp. 6-17 & 289-292 as applied to claims 5-7, 9, 20, 23, and 27 above, and further in view of Tanaka *et al.* in US Patent 6,190,811.

The JP document, Fleischer, and Borsenberger text were described above. These references do not disclose the specific wavelength of exposure for the photoconductor containing the porphyrin, as suggested by the combined references. Further, these references do not suggest the claimed process cartridge or exposure source for the apparatus.

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Tanaka discloses a process cartridge detachably mountable to an electrophotographic apparatus and an electrophotographic apparatus. The apparatus has a semiconductor laser light with an exposure wavelength of 380 to 500 nm (col. 6, l. 4-13). This is the wavelength in which the photosensitive member is sensitive (col. 2, l. 7-17).

As discussed in the patent with respect to Figure 4, the apparatus may be constructed of a combination of plural components integrally joined as a process cartridge from among the constituents such as an electrophotographic photosensitive member **1**, primary charging means **3**, developing means **5** and cleaning means **9** so that the process cartridge is detachably mountable to the body of the electrophotographic apparatus such as a copying machine or a laser beam printer. At least one of the primary charging means **3**, the developing means **5** and the cleaning means **9** may integrally be supported in a cartridge together with the electrophotographic photosensitive member **1** to form a process cartridge **11** that is detachably mountable to the body of the apparatus (col. 6, l. 56 - col. 7, l. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the photoconductor having the JP reference's porphyrin in an apparatus or process cartridge as disclosed by Tanaka because the JP document discloses a photoconductive element, Borsenberger discloses the typical construction of devices (i.e., apparatuses and cartridges) using photoconductive elements and Tanaka discloses a process cartridge and electrophotographic apparatus that exposes photoconductors to laser beam wavelengths within this range. Electrophotographic apparatuses (e.g., photocopiers) and process cartridges detachably mountable in an electrophotographic apparatus (e.g., Laser Printers) are ubiquitous in office settings. The artisan seeking to automate the production of copies using the JP reference's photoconductive element would have found it obvious to use the photoconductor in such well-known devices.



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***Allowable Subject Matter***

Claims 8 and 10-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on workdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff, can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr

  
CHRISTOPHER RODEE  
PRIMARY EXAMINER

5 February 2004